UNIX Configuration Guide v2.06 05/10/1999

INTRODUCTION

This UNIX Compatibility Guide allows Sony tape streamer products to be configured to work with workstations in popular open systems environments:

+Compaq/Digital Alpha workstations and servers
+HP workstations and servers
+IBM workstations and servers
+PC (intel x86) UNIX workstations including Linux, SCO, and Solaris x86
+SGI workstations and servers
+SUN workstations and servers
+SDT-5000 emulation mode AIT1 and AIT2 ONLY

+Verifying your install is correct
+Hardware Dipswitch Settings
+Hardware Jumper Settings

The guide is intended to be used in conjunction with and in addition to the hardware and software installation and operation instructions that accompany your tape drive and your workstation.

This guide covers the following devices (Table.1):

Model	Format	Capacity	Inquiry String	Minimum Firmware Level	Media
SDX-500C	AIT2	50GB	SDX-500C	0100 and above	AIT1 25GB/35GB AIT2 50GB
SDX-300C TSL-A300C	AIT1	25GB	SDX-300C	0300 and above	AIT1 25GB/35GB
SDT-10000	DDS4	24GB	SDT-10000	0100 and above	DDS4, DDS3, DDS2, DDS1
SDT-9000 TSL-9000	DDS3	12GB	SDT-9000	0126 and above	DDS3, DDS2, DDS1
SDT-7000	DDS2	4GB	SDT-7000	0195 and above	DDS2, DDS1

We have verified the following:

+the drive can be recognized by the system
+the user can perform simple tar and dd operations

We do not specifically check for the following:

+drive performance
+host control over block-size changes
+host control over hardware compression
+compatibility w/ fancy GUI or 3rd party backup utilities

DRIVE FIRMWARE

These instructions apply only to Sony tape drives with firmware supporting UNIX operation (see table.1 above). If there is any doubt that your Sony tape drive has UNIX firmware support, check the firmware level reported through the drive inquiry command. If your tape drive has a lower level of firmware than

shown in this document and you experience problems using the drive in one of the supported environments, contact your reseller for a firmware upgrade.

UNIX CONFIGURATION SWITCH SETTINGS

Sony DDS and AIT tape drives are designed with a set of UNIX configuration switches on the bottom of the drive mechanism. The factory settings may need to be changed to customize the drive for top performance and capacity with your workstation. Ensure also that your drive is configured correctly with regards to SCSI ID, termination, etc. (see DIP switch configuration or Hardware Jumpers).

MEDIA USAGE

Sony recommends the use of Sony branded media on its drives. Sony media is specifically manufactured for full compatibility with its drives. Please see table.1 above for drive and media compatibility. This is especially true for Sony 8mm tape drives, since Sony 8mm media is an Advanced Metal Evaporative (AME) media manufactured exclusively for Sony 8mm drives. Cartridges and media for these drives are not interchangeable with other 8mm tape products.

REGARDING AUTOLOADERS

Sony Autoloaders are compatible with various UNIX systems. However, full functionality may not always be available without third-party software**.**

In general the autoloader can be configured using the same method as a standalone drive. For example, on an SGI system change the required files using the correct loader inquiry string instead of the standalone drive inquiry string. “TSL-A300C” instead of “SDX-300C”.

Autoloaders can be used with the various UNIX workstations via the following methods:

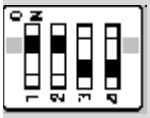
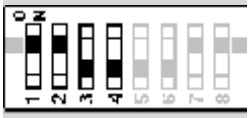
The TSL-9000 has a single-tape mode function, where only slot 8 of the magazine is loaded with a tape. In this mode the autoloader will behave as a standalone DAT drive, without any autoloader functionality.

Both the TSL-9000 and TSL-A300C have a Sequential Mode. By default, the autoloader enters this mode when the select button has been pressed and the selected tape is loaded successfully. In this mode the, the autoloader will load cartridges sequentially. Upon receiving a scsi UNLOAD command to LUN 0 the cartridge will be automatically replaced in its slot in the magazine and the next highest cartridge is loaded. This continues for each UNLOAD command until there are no more cartridges. If the UNLOAD command is received for the last cartridge (#8) then the autoloader will simply place it back in the magazine and no further action is taken. On some UNIX systems the **mt** command will allow you to send the UNLOAD command (see the man pages for your particular system and the product manual for your particular autoloader). For example, IRIX uses the **scsicontrol** command and SCO Openserver uses the **tape** command with the unload flag.

*Note: The TSL-7000 does not support UNIX systems.

SGI SYSTEMS

The Sony SDT-9000 and SDX-300C are command-line compatible with Irix 5.x and Irix 6.x using the configuration switch settings for SGI workstations. For device file control and tape access from the Irix desktop, the Kernel needs to be modified or the correct patch must be loaded. However, not all functionality is available under all versions of Irix.

Hardware	Operating System	SDT-7000 SDT-9000 TSL-9000	SDX-300C SDX-500C TSL-A300C SDT-10000
Indy Irix 5.3 Indigo Irix 6.2 O2 Irix 6.3 (limited)* Octane 6.4 IRIX 6.5	IRIX 5.3 IRIX 6.x IRIX 6.4 IRIX 6.5		

Web reference: http://www.sgi.com

*under 6.3 SDX-300C drive compression cannot be controlled via the device types, it is always enabled. However compression can always be enabled/disabled via drive hardware settings.

Set the configuration switches as shown above. Make sure that the current SGI recommended patch sets are installed. See SGI support website for current releases, you will need a support contract for access to most of the patches.

As of 9/21/98 these are the patches needed:

IRIX Version	Patch#	Description
IRIX 5.3	2184 1948 2224	+5.3 Tape driver bug fixes +HINV rollup +SCSI Rollup for 5.3
IRIX 6.2	2861	+6.2 Tape Driver rollup
IRIX 6.3	2838	+6.3 Tape driver fixes
IRIX 6.4	3301 2998 3305	+SCSI rollup +6.4 Tape driver fixes +HINV rollup

To start looking for the latest available SGI patches look here:
`http://www.sgi.com/support/patch_intro.html`
A searchable patches database is available here:
`http://support.sgi.com/surfzone/patches`
*You'll need to register to access this area.

2. For **IRIX 5.3, 6.2, and 6.3** you must do two things:

+add the following entry to **/dev/MAKEDEV.d/TPS_base**

search for the following entry:

```
*Drive?type:*DAT*|*Drive?type:*8mm?8200*)
    set s nrs ns "" nrns nr sv nrsv nsv v nrnsv nrv ;
    for add in 0 1 2 2 3 3 4 5 6 6 7 7 ; do
        mdev=`expr $minor + $add`;
        mknod ${prf}$1 c ${C_TPS} $mdev;
        case "$stat" {
        *Device:*Python*01931*) # DDS2 drive with compression
                mdev=`expr $mdev + 8`;
                mknod ${prf}$1c c ${C_TPS} $mdev;
                ;;
        }
        shift;
    done ;;
```

add the (**blue**) entry so that the entire entry looks like this:

```
*Drive?type:*DAT*|*Drive?type:*8mm?8200*)
    set s nrs ns "" nrns nr sv nrsv nsv v nrnsv nrv ;
    for add in 0 1 2 2 3 3 4 5 6 6 7 7 ; do
        mdev=`expr $minor + $add`;
        mknod ${prf}$1 c ${C_TPS} $mdev;
        case "$stat" {
        *Device:*Python*01931*) # DDS2 drive with compression
                mdev=`expr $mdev + 8`;
                mknod ${prf}$1c c ${C_TPS} $mdev;
                ;;
        *Device:*SDT-9000*)
                mdev=`expr $mdev + 8`;
                mknod ${prf}$1c c ${C_TPS} $mdev;
                ;;
        *Device:*SDX-300C*)
                mdev=`expr $mdev + 8`;
                mknod ${prf}$1c c ${C_TPS} $mdev;
                ;;
        }
        shift;
    done ;;
```

*You can substitute the correct inquiry string for any Sony drive you wish to add here, including autoloaders. For example, instead of **`*Device:*SDX-300C*)`** **you can use** **`*Device:*TSL-A300C*)`**

+add the following entry to **/var/sysgen/master.d/scsi**

```
{
  DATTAPE,TPDAT,4,8,"SONY","SDT-9000",0,0,{0,0,0,0},
  MTCAN_BSF|MTCAN_BSR|MTCAN_APPEND|MTCAN_SETMK|MTCAN_PART|
```

```
  MTCAN_PREV|MTCAN_SYNC|MTCAN_SPEOD|MTCAN_CHKRDY|
  MTCAN_VAR|MTCAN_SETSZ|MTCAN_SILI|MTCAN_SEEK|
  MTCAN_CHTYPEANY|MTCAN_SETDEN,
  60,4*60,4*60,6*60,512,512*512
},
```

or

```
{
  DATTAPE,TPDAT,4,8,"SONY","SDX-300C",0,0,{0,0,0,0},
  MTCAN_BSF|MTCAN_BSR|MTCAN_APPEND|MTCAN_SETMK|MTCAN_PART|
  MTCAN_PREV|MTCAN_SYNC|MTCAN_SPEOD|MTCAN_CHKRDY|
  MTCAN_VAR|MTCAN_SETSZ|MTCAN_SILI|MTCAN_SEEK|
  MTCAN_CHTYPEANY|MTCAN_SETDEN,
  60,4*60,4*60,6*60,512,512*512
},
```

*You can substitute the correct inquiry string for any Sony drive you wish to add here, including autoloaders. For example, instead of **`*Device:*SDX-300C*)`** **you can use** **`*Device:*TSL-A300C*)`**

3. After modifying the **scsi** file use **autoconfig** to rebuild the kernel. (see the autoconfig man page)

For **IRIX 6.4** support for both the SDT-9000 and SDX-300C you must get at least the following patches from SGI. (It is always a good idea to search the SGI website for the latest available patches, see patch table above):

#2837 SCSI rollup
#2863 Tape driver updates
#2871 HINV rollup

After loading the required patches you may need to follow the IRIX 5.3, 6.2, and 6.3 procedure above to modify the kernel. If the **/dev/MAKEDEV.d/TPS_base** and the **/var/sysgen/master.d/scsi** files already contain the appropriate entries you will just need to run **autoconfig**.

For **IRIX 6.5** support for both the SDT-9000 and SDX-300C no kernel modifications are necessary.

SGI specific notes:

1. Kernel must be rebuilt with Sony drive configuration information or correct patch must be loaded for drive to appear on desktop. *SGI is always releasing patches, for the latest patches please check SGI support website.

MTCAN notes for **/var/sysgen/master.d/scsi** file:
These device file names can be interpreted as follows:

Device Name	Function
nr	No rewind on close
v	Device supports variable block sizes
ns	Device does not byte-swap
s	Device does byte-swap
stat	Allows the device to be used when one of

the other device files specifying the same physical device is already opened

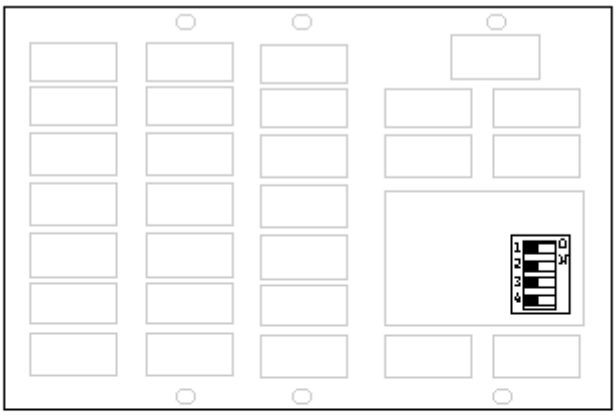
The MTCAN values have the following functions:

MTCAN value	Capability Enabled
APPEND	Append to existing tape data
BSF	Backspace file
BSR	Backspace record
CHKRDY	Determine if tape cartridge is present
CHTYPEANY	Change density and/or fixed to variable at points other than beginning of tape
PART	Multiple Partitions
PREV	Prevent media removal
SEEK	Seek to a particular block
SETMK	Setmarks
SETSZ	Fixed Block Size can be set
SILI	Suppress illegal length indicators
SPEOD	Space to end of data
SYNC	Synchronous Mode SCSI
VAR	Variable block sizes

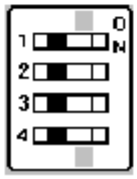
The constants have the following functions:

Constant	Description
40	Transfer time-out in "inverse ticks"
4*60	Minimum time-out in seconds for any command
4*60	Space command time-out in seconds
5*60	Time-out in seconds for long operations (such as rewinds)
512	Default block size in bytes for fixed block size mode
64*512	Recommended blocking factor in bytes for the upper limit of read/write commands

UNIX SWITCH LOCATIONS



UNIX
Compatibility
Switches



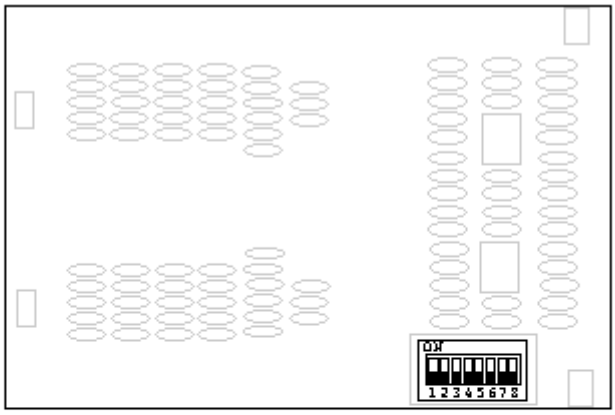
DDS Series:

SDT-7000

SDT-9000

SDT-10000 (bank of 8 switches)

TSL-9000



UNIX
Switches

AIT Series:

SDX-300C

SDX-500C

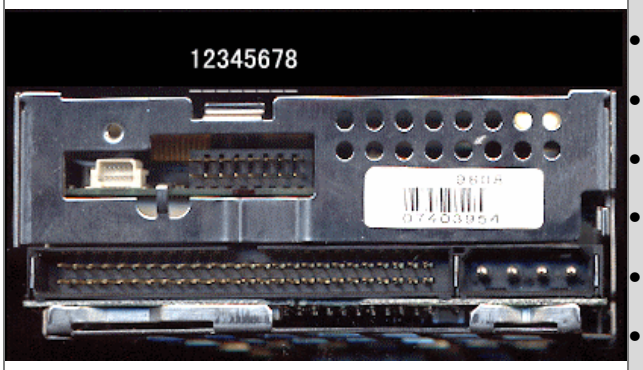
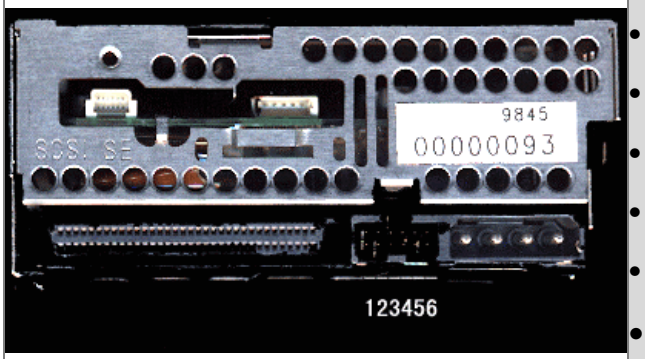
TSL-A300C

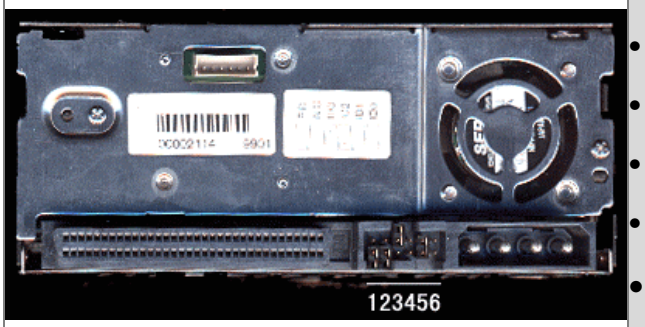
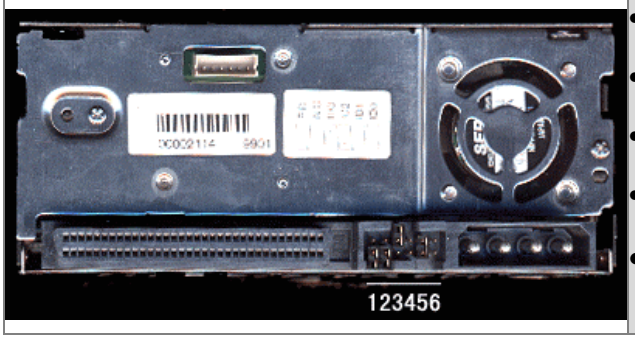
for Rev A SDX-300C Hardware:
5) Reserved (OFF)
6) Reserved (OFF)
7) Compression enable(ON)
8) Parity enable (ON)

for Rev B SDX-300C and above Hardware:
5) Term Power enable
6) Terminator enable
7) Host Compression Control 1
8) Host Compression Control 2

for SDX-500C Hardware:
5) Term Power enable
6) Reserved (OFF)
7) Host Compression Control 1
8) Host Compression Control 2

HARDWARE JUMPER SETTINGS

SDT-7000 **SDT-9000**  	• **1 – ID2** • **2 – ID1** • **3 – ID0** • **4 – Data Compression Disable** • **5 – Parity Disable** • **6 – Reserved** • **7 – Termination Enable** • **8 – Term PWR**
SDT-10000  	• **1 - Parity Enable** • **2 - Reserved** • **3 - ID3** • **4 - ID2** • **5 - ID1** • **6 - ID0**

SDX-300C (Rev A Hardware)  	• **1 - ID3** • **2 - ID2** • **3 - ID1** • **4 - ID0** • **5 – Termination Enable** • **6 - Term PWR**
SDX-300C (Rev B Hardware) **SDX-500C**  	• **1 - Parity Disable** • **2 – Reserved** • **3 - ID3** • **4 - ID2** • **5 - ID1** • **6 - ID0**

Revision History:

+2.06 05/10/99 added more TSL info, added all Sony drives to Sun tape_config, removed references to SDT-5000 emulation mode for AIT2, added SDX-300C emulation mode for AIT2.
+2.05 04/15/99 added info on SDX-500C (AIT2) and SDT-10000 (DDS4), removed references to TSL-7000, new format, better jumper/dipswitch graphics, pdf format.
+2.04 01/04/99 added more detail for Digital Unix 3.x., Rev.B AIT dipswitch settings were incorrect for Termination and Term Power.
+2.03 11/09/98 added more detail for PC-based UNIX systems.
+2.02 11/06/98 clarified Irix 6.4 details.
+2.01 11/04/98 changed AIX 4.x details and Sun Ultra series hardware using Symbios 8c375 scsi chips.
+2.0 10/14/98 Official Release
+1.x 10/01/98 First draft.